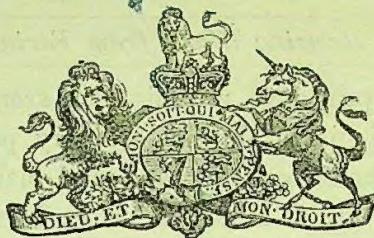


426/29

BEVERAGES



Sugar added  
RECORDED

A.D. 1860, 3rd APRIL. N° 859.

Brewing Worts from Farinaceous Substances, and  
Preserving Fermentable Liquids.

LETTERS PATENT to Anthon Nicolay Jensen, of 3, Chambers Terrace, Malden Road, Haverstock Hill, London, in the County of Middlesex, Operating Brewer and Distiller, for the Invention of "IMPROVEMENTS IN BREWING WORTS FROM SACCHARINE AND FARINACEOUS SUBSTANCES, WITH A NEW METHOD OF RETAINING THE AROMA AND BETTER QUALITIES OF THE HOPS, FORMING AN INFALLIBLY KEEPING ALE NEARLY WHITE, AND ADMITTING OF AERATION, PART OF WHICH IMPROVEMENTS IS APPLICABLE TO DISTILLERS' WASH, VINEGAR MAKING, AND PRESERVING FERMENTABLE LIQUORS."

Sealed the 1st June 1860, and dated the 3rd April 1860.

PROVISIONAL SPECIFICATION left by the said Anthon Nicolay Jensen at the Office of the Commissioners of Patents, with his Petition, on the 3rd April 1860.

I, ANTHON NICOLAY JENSEN, of 3, Chambers Terrace, Malden Road, 5 Haverstock Hill, London, in the County of Middlesex, Operating Brewer and Distiller, do hereby declare the nature of the said Invention for "IMPROVEMENTS IN BREWING WORTS FROM SACCHARINE AND FARINACEOUS SUBSTANCES, WITH A NEW METHOD OF RETAINING THE AROMA AND BETTER QUALITIES OF THE HOPS, FORMING AN INFALLIBLY KEEPING ALE NEARLY WHITE, AND ADMITTING OF AERATION, PART OF WHICH IMPROVEMENTS IS APPLICABLE TO DISTILLERS' WASH, VINEGAR MAKING, AND PRESERVING FERMENTABLE LIQUORS," to be as follows:—

This Invention relates, firstly, to the making of an ale (the basis of which

*Jensen's Improvements in Brewing Worts from Farinaceous Substances, &c.*

is also applicable for other purposes), retaining the aroma and fragrance of the hops, which are lost or dissipated by the ordinary process of brewing, and expelling or separating therefrom the rank and narcotic parts and other extraneous matters. This ale is almost colorless, being paler than any ale heretofore brewed, will not become flat, lose its brightness, nor leave a 5 sediment in the cask or bottle; it will therefore furnish an excellent recipient for flavors, and will mix well with other liquors in its hopped or otherwise flavored state, and, if made sufficiently strong, will mix with aërated or other waters, and even with hot water.

To brew ale having the aforesaid qualities, I make the wort or worts either 10 from malt or sugar separately or combined, or from any other farinaceous or saccharine substances or combination of substances by the ordinary process of mashing and drainage (brewing), or mashing only, or dissolving; and in operating upon worts abounding in sediment arising either from their materials being to an excess possessed of extraneous matters, or from chemicals used in the saccharizing process, for instance in the employment of rice or potato flour, I dilute the worts with cold water to the extent of about 15 doubling their bulk in order to completely precipitate all the sediment; I then decant or drain off the brighter part, and reduce the same again with cold water as before, repeating this process until at last the wort contains 20 no more density than about three pounds specific gravity. The bright clear worts thus produced are then to be condensed by direct or indirect heat to the required density, and thus a wort of superior quality is produced suitable for brewing, distilling, or other purposes perfectly pure and uncontaminated with chemicals, sediment, or other extraneous matters.

25

In operating upon rice, potato flour, or other substance requiring a different process of saccharization to malt, I add about twenty per cent. of thoroughly malted barley or about five per cent. of sulphuric acid, increasing the quantity of either, if the substance used abound in starch. The proportion of liquor or water which I use in the process is from four to five times the weight of the 30 substance used. With malt the time required for saccharization at a temperature of one hundred and fifty degrees Farenheit will be about three hours, whilst with sulphuric acid at a boiling temperature the time varies from five to ten hours according to the density of the sulphuric acid employed. In order to neutralize the acid I employ chalk, testing the wort with litmus paper until it is found to be in a neutral state, in which condition I prefer it to be.

35

Having obtained such worts or worts brewed in the ordinary way, and cooled down or otherwise arranged the temperature according to the season (as is

*Jensen's Improvements in Brewing Worts from Farinaceous Substances, &c.*

well understood by brewers), I subject the same to vinous fermentation by means of common yeast; but in order to convert such wort into the basis for ale or other liquors (and this is an essential feature in my Invention), I urge the fermentation so as to leave none of the decomposable matters unattenuated, instead of leaving from twenty to fifty per cent. of the extractive matters unattenuated, as usually practised. These fermented worts or basis for the ale having been allowed to settle, are to be "racked off" from the yeasty sediment and "hopped" forthwith, which is effected by immersing therein when cold, or considerably below the temperature of one hundred and 10 sixty-seven degrees Farenheit, a sufficient quantity of hops to impart the required tone or flavor. One week's infusion of the hops will generally suffice for their imparting their better qualities to the fermented worts or basis above named.

This is another peculiar feature of the Invention; in other respects the 15 treatment of the ale is the same as under the ordinary system. The ale or other liquor thus produced will be of a "dry" and "still" character, and is therefore suitable for keeping or exportation, and can be made effervescent or sparkling at any time, in a few days, (or weeks, according to temperature,) by adding loaf sugar or other similar saccharine matter. Should it be desired to 20 keep or export the ale or liquor in its sweetened state, the development of the fermentation may be checked or delayed by calorific agency, for instance, by plunging the bottles (or other vessels containing the same) for five minutes or longer according to the volume in boiling water. The latent effervescence thus suspended may at any time (when required) be developed by admitting 25 air into the vessels, or by pouring the ale from one vessel into another. Or the ale or liquor being perfectly pure (whether "dry" or sweetened) can be aerated with carbonic acid gas in the same manner as aerated waters are made, or it may be mixed with aerated waters in the proportion of half and half, if of sufficient strength, retaining as before its brightness and other 30 qualities unimpaired. The white or almost colorless ale or basis produced by my improved process of brewing being "dry," pure and very strong, instead of being "hopped," may be flavored and colored in any other way desired, or mixed with British wines or other beverages preserving and improving their strength. It may also be used as a wash for distilling plain spirit or it may 35 be converted into vinegar, either by slow or instantaneous acidification, and vinegar made therefrom would not be liable to turn "ropy," as it would not contain any of the usual glutinous viscid matters, and therefore the sulphuric acid usually employed to remedy this defect might be dispensed with.

The process of calorification and re-admission of air as above described with

*Jensen's Improvements in Brewing Worts from Farinaceous Substances, &c.*

reference to ale is also applicable to preserving the condition of wine or other fermentable liquors.

**SPECIFICATION** in pursuance of the conditions of the Letters Patent, filed by the said Anthon Nicolay Jensen in the Great Seal Patent Office on the 23rd August 1860. 5

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, ANTHON NICOLAY JENSEN, of 3, Chambers Terrace, Malden Road, Haverstock Hill, London, in the County of Middlesex, Operating Brewer and Distiller, send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters 10 Patent, bearing date the Third day of April, in the year of our Lord One thousand eight hundred and sixty, in the twenty-third year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said Anthon Nicolay Jensen, Her special licence that I, the said Anthon Nicolay Jensen, my executors, administrators, and assigns, or such other as I, the said Anthon 15 Nicolay Jensen, my executors, administrators, and assigns, should at any time agree with, and no others, from time to time and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "IMPROVEMENTS IN BREWING WORTS FROM SACCHARINE AND FARINACEOUS SUBSTANCES, WITH A NEW METHOD OF RETAINING THE AROMA AND BETTER QUALITIES OF THE HOPS, FORMING AN INFALLIBLY KEEPING ALE NEARLY WHITE, AND ADMITTING OF AERATION, PART OF WHICH IMPROVEMENTS IS APPLICABLE TO DISTILLERS' WASH, VINEGAR MAKING, AND PRESERVING FERMENTABLE LIQUORS," upon the condition 20 (amongst others) that I, the said Anthon Nicolay Jensen, my executors or administrators, by an instrument in writing under my, or their, or one of their hands and seals, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within 25 six calendar months next and immediately after the date of the said Letters Patent.

NOW KNOW YE, that I, the said Anthon Nicolay Jensen, do hereby declare the nature of my said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the 30 following statement in writing, that is to say :—

*Jensen's Improvements in Brewing Worts from Farinaceous Substances, &c.*

This Invention relates, firstly, to the making of an ale (the basis of which is also applicable for other purposes), retaining the aroma and fragrance of the hops, which are lost or dissipated by the ordinary process of brewing, and expelling or separating the rank and narcotic parts from the same, and other 5 extraneous matters from the other brewing materials. This ale is almost colorless, being paler than any ale heretofore brewed, will not become flat, lose its brightness, nor leave a sediment in the cask or bottle; it will therefore furnish an excellent recipient for flavors, and will mix well with other liquors in its hopped, unhopped, or otherwise flavoured state, and, if made sufficiently 10 strong, will mix with aerated or other waters, and even with hot water.

To brew ale having the aforesaid qualities, I make the wort or worts either from malt or sugar, separately or combined, or from any other farinaceous or saccharine substances or combination of substances by the ordinary process of mashing and drainage (brewing), or mashing only, or dissolving; and 15 in operating upon worts abounding in sediment, arising either from their materials being to an excess possessed of extraneous matters, or from chemicals used in the saccharizing process, for instance, in the employment of rice or potato flour, I dilute the worts with cold water, to the extent of about doubling their bulk, in order to completely precipitate all the sediment. I then decant 20 or drain off the brighter part, and reduce the residue again with cold water as before, repeating this process until the last wort contains no more density than about three pounds specific gravity. The bright clear worts thus produced are then to be condensed by direct or indirect heat to the required density, and thus a wort of superior quality and value is produced suitable for 25 brewing, distilling, or other purposes perfectly pure and uncontaminated with chemicals, sediment, or other extraneous matters.

In operating upon rice, potato flour, or other substances requiring a different process of saccharization to malt, I add about twenty per cent. of thoroughly malted barley, or about five per cent. of sulphuric acid, increasing the quantity 30 of either if the substance used abound in starch. The proportion of liquor or water which I use in the process is from four to five times the weight of the substance used. With malt from barley the time required for saccharization at a temperature of 150 degrees Fahrenheit will be about three hours, whilst with sulphuric acid at a boiling temperature the time varies from five to ten 35 hours, according to the density of the sulphuric acid employed. In order to neutralize the acid, I employ chalk, testing the wort with litmus paper until it is found to be in a neutral state, in which condition I prefer it to be.

Having obtained such wort as above described, or wort brewed in the ordinary way, and cooled down or otherwise arranged the temperature according

*Jensen's Improvements in Brewing Worts from Farinaceous Substances, &c.*

to the season (as is well understood by brewers), I subject the same to vinous fermentation by means of common yeast; but in order to convert such wort into the basis for ale or other vinous liquors (and this is an essential feature in my Invention), I urge the fermentation so as to leave none of the decomposable matters unattenuated, instead of leaving from twenty to fifty per cent. 5 of the extractive matters unattenuated, as usually practised with beers. These fermented worts or basis for the ale having been allowed to settle, are to be "racked off" from the yeasty sediment, and "hopped" forthwith, which is effected by immersing therein when cold, or considerably below the temperature of 167 degrees Fahrenheit, a sufficient quantity of hops to impart 10 the required tone or flavor. One week's infusion of the hops will generally suffice for their imparting their better qualities to the fermented worts or basis above named. It is only by preparing the hop infusion in a cold state that the peculiar fragrance and fine aroma so characteristic of new dry hops (but scarcely traceable in the beer made from them by the ordinary process) 15 can be retained, as being very volatile they pass off among the ascending vapours when boiling the worts.

This is another peculiar feature of the Invention; in other respects the treatment of the ale is the same as under the ordinary system.

I do not confine or restrict myself to any particular method or degree of 20 coloring this ale, as it can be made deeper in color by carbonized sugar or by mixing it with beers of ordinary make, or otherwise; or it may be converted into porter or stout by the addition of a suitable per-cent-age of the black malt with any of the aforesaid saccharine or farinaceous substances during the brewing operation. 25

The ale or other vinous liquor produced by complete attenuation will be of a "dry" and "still" character, and is thus very suitable for keeping or exportation, for in consequence of holding none of its original saccharine in solution to be acted upon by the fermenting agent, no fretting or re-fermentation can take place in the beer or basis, which remains unchangeable because unaffected, 30 and can be made effervescent or sparkling at any time in a few days (or weeks according to temperatue) by adding loaf sugar or other similar saccharine matter, whereby the dormant fermentative elements are revived.

By adding loaf sugar or other similar saccharine matter in different proportions, ales of various degrees of richness can be produced off-hand from the 35 same still dry ale, the said ales so sweetened being fit to be drunk immediately if effervescence be not required, since no flatness will be perceptible in any of the densities.

Should it be desired to keep or export the ale or liquor in its sweetened state,

*Jensen's Improvements in Brewing Worts from Farinaceous Substances, &c.*

the development of the fermentation may be checked or delayed by calorific agency, for instance, by plunging the bottles (or other vessels containing the same) for five minutes or longer, according to the volume, in boiling water, allowing about five per cent. space in such vessels for expansion by heat.

5 By this means the atmospheric oxygen within the vessels becomes absorbed or destroyed, and therefore no reaction can take place.

The latent effervescence thus suspended may at any time, when required, be developed by admitting air into the vessels or by pouring the ale from one vessel into another. Or the ale or liquor being perfectly pure (whether 10 "dry" or sweetened), can be aerated with carbonic acid gas in the same manner as aerated waters are made; or it may be mixed with aerated waters in the proportion of half and half (if of sufficient strength), retaining as before its brightness and other qualities unimpaired, and furnishing in both cases an instantaneous ready-made effervescent beer in bottles or otherwise, with great 15 economy of time and capital.

The white or almost colorless ale or basis produced by my improved process of brewing being "dry," pure, and very strong, instead of being "hopped," may be flavored and colored in any other way desired, or mixed with British wines or other beverages improving their strength. It may also 20 be mixed with either cold or hot water without any other detriment except the mere fact of dilution. It may also be used as a wash for distilling a superior plain spirit, or it may be converted into vinegar either by slow or instantaneous acidification, and vinegar made therefrom would not be liable to turn "ropy," as it would not contain any of the usual glutinous viscid matters, and 25 therefore the sulphuric acid usually employed to remedy this defect might be dispensed with, or the ale (when hopped) may be used to impart a creamy head to flat ales of the ordinary make, if mixed therewith, or otherwise to restore the original qualities of drooping beers which its delicacy of flavor and effervescent power when so mixed will effect.

30 The process of calorification and re-admission of air, as above described with reference to ale, is also applicable to preserving the condition of wine or other fermentable liquors.

Having now described the nature and object of my said Invention, together with the manner in which the same is to be or may be performed, I would 35 here remark, in conclusion, that I claim as my Invention,—

Firstly, the method of producing saccharine worts (whether made from saccharine or farinaceous substances) by the process above described, especially the system of extreme dilution with cold water to precipitate all the impurities and re-condensation to the required density.

*Jensen's Improvements in Brewing Worts from Farinaceous Substances, &c.*

Secondly, the converting such worts (or worts brewed in the ordinary way) into the basis for ale or other liquors, as above described, by the system of total or complete attenuation in the fermenting process.

Thirdly, the extracting the tonic, aromatic, and other desirable qualities from the hops by cold infusion, or by infusion at a temperature considerably 5 below one hundred and sixty-seven degrees Fahrenheit, whether employed with worts totally or partially attenuated, without confining or restricting myself to the precise time or manner of imparting the same to the worts, as this may be done in a variety of ways; for instance, by using the hop extract as a mashing liquor, or by adding the requisite quantity of dry hops to the worts before or 10 during fermentation, but I prefer the method above described.

Fourthly, with respect to distillers' wash for the working of plain spirit, I claim the mode of settling and clarifying the worts, as described, by thinning and condensation previous to fermentation.

Fifthly, I claim the method of checking the development of the fermentation of the said ale or basis for ale, or other ale, wine, or fermentable liquor, by means of calorific agency, as above described, and the method of restoring or again developing the fermentation by exposing the liquor to the action of the atmosphere.

Sixthly, the aeration of the said ale or basis by carbonic acid gas, or by 20 mixing it with aerated waters, as described.

Seventhly, the addition of the said ale or basis to British wines or other beverages, for the purpose of preserving and improving their qualities.

And, eighthly, the employment of the said ale or basis for conversion into vinegar especially on the principle of instantaneous acidification, whereby the 25 sulphuric acid usually employed may be dispensed with.

In witness whereof, I, the said Anthon Nicolay Jensen, have hereunto set my hand and seal, this Seventeenth day of August, in the year of our Lord One thousand eight hundred and sixty.

A. N. JENSEN. (L.S.) 30

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